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The peritoneal relations of the Cæcum &c.

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With the respectful Compliments of
R. Meadas.

The Peritoneal Relations of the Cæcum.

RECTIFICATION OF AN HISTORICAL ERROR.

[From the New Orleans Medical and Surgical Journal, December, 1887.]

Messrs. Editors:—The recent appearance of the twelfth American edition of Gray's Anatomy as ably revised by Pick of London, and Keen of Philadelphia, in which the old account of the peritoneal relations of the cæcum has been completetly cancelled and the more recent teachings of Mr. Treves substituted with the emphatic endorsement of the editors, has suggested to me the propriety of calling your attention to an error, which I believe is gaining currency among writers who have occupied themselves with the anatomy of the cæcum since the appearance of Mr. Treves' lectures,* and which is well exemplified in this edition of our great classic. The error in question does not involve the correctness of Mr. Treves' teachings; on the contrary, I cannot but regard the substitution of Mr. Treves' conclusions in place of the traditional and erroneous description given in former editions, as a matter worthy of congratulation—but it refers simply to error of regarding the corrected description of Mr. Treves as entirely "new" and of assigning to this anatomist the merit of first discovering the inaccuracy of the old description. As a matter of fact, the teaching that the cæcum is a viscus entirely invested by peritoneum with which the name of Mr. Treves is now usually connected, is a comparatively old teaching, as it is precisely the same that was maintained, and most emphatically, by Bardeleben and H. Luschka at least twenty-five years before Mr. Treves' lectures were published.

It is only curious that, notwithstanding the commanding

*The Anatomy of the Intestinal Canal and Peritoneum in Man. Hunterian Lectures delivered before the Royal College of Surgeons of England. *British Medical Journal* March 1–21, 1885.

authority of so great an anatomist as Luschka, the facts brought out by him should have been practically ignored by almost all descriptive anatomists excepting those of the German school and its followers.

It is, indeed, more than probable that if Mr. Treves had not intervened with his admirable and convincing demonstrations, we would still find the ancient descriptive relic as well preserved as ever—at least in English and French texts.

I must state that at the time that I endeavored to utilize Mr. Treves' researches in an article on "Iliac Phlegmons," contributed to the Transactions of the Louisiana State Medical Society for 1886, and published in the July and August numbers of this JOURNAL during the same year, I was unaware of the just claims to priority which the German anatomists possessed. At the time I exclusively associated Mr. Treves' name with the facts that he taught and that I had confirmed, believing him to be the only author to whom credit was due. It was not until September, 1886, when reading an able review of my paper in the *Revista de Ciencias Medicas*, Barcelona (vol. xii, No. 16, 1886), that I was much surprised to learn the comparative antiquity of the discoveries (pertaining to the peritoneal investment of the cæcum) presented by Mr. Treves. Since that time I have amply confirmed my reviewer's references, as the subjoined extracts show, and have found that not only in his anatomy has Mr. Treves been antedated by H. Luschka, but also in the surgical application of "his views," as will be observed in reading the paragraphs relating to cæcal hernia, in which Luschka insists upon the fact that these herniæ, contrary to the general belief, *are* as a rule possessed of a sac like the typical herniæ.

Mr. Treves has more recently contributed a valuable paper on cæcal hernia (Medical Society of London, October 18, 1886, *British Medical Journal*, February 19, 1887), in which he repeats and emphasizes his conclusion previously announced in the Hunterian Lectures, i. e., the

complete serous investment of the cæcum; and with it, as a guiding principle, comes, after a very interesting and profitable inquiry, to the same conclusion which Luschka had reached nearly a quarter of a century before him. Throughout this paper, as in his Hunterian Lectures, no reference or allusion is made to Luschka's work, though marked evidences of literary research are displayed in both instances. This, however, does not affect in the least the originality of Mr. Treves' labors, which possess too much individuality, are too well burdened with the proof of independent thought and conscientious observation, to be suspected for one instant of even imitation. That he has overlooked the records of German scientific research in this one particular can hardly be denied, notwithstanding the fact that he has proved himself quite a master of them on other occasions. Mr. Treves' successors in this field have, like him, failed to do justice to the Germans, all of them without exception—at least to my knowledge—referring to the teaching re-introduced in the Hunterian Lectures as new, and in discussing or approving, always referring to them as "Mr. Treves' observations," which confirms my suspicion that these writers have, like myself, trusted entirely to the well known erudition of this gentleman and deemed it superfluous to supplement the reading of his papers by interrogating the bibliography. As illustrations of this statement, and also of the marked attention and corroboration with which "Mr. Treves' views," have been received by the anatomical world since their publication, I would cite the discussion which took place in the New York Surgical Society, December 8, 1886, following the reading of a report of a case of perityphlitic abscess, by Prof. Robert F. Weir (vide *Medical News*, January 15, 1887). A paper by Prof. Weir ("A Plea for Earlier Operations in Perityphlitic Abscess with a Case of Laparotomy," etc., New York *Medical Record*, June 11, 1887), in which he accepts and applies Mr. Treves' observations. The exhaustive monograph on the Anatomy of the Peritoneum, by Barraban, in that monumental work, the yet unfinished

Dictionnaire Encyclopédique des Sciences Médicales, edited by Dechambre & Lerrèboullet (Peric-Perit, 1887), in which Mr. Treves is copiously quoted and approved, though no allusion even is made to German investigations. The special paper on the "Relations of the Peritoneum and the Cæcum," by M. Tuffier (Prosector of the Faculty of Paris), read before the Anatomical Society of Paris, November 5, 1886 (*Progrès Médical*, February 26, 1887, vol. v. p. 175), in which, "after the examination of over one hundred cadavers, ranging from a seven-month's fœtus to old age," this observer was able to corroborate Mr. Treves' conclusions in their entirety (no mention of Bardeleben, Luschka or others, however). So does Greig Smith, in his recent "Abdominal Surgery" (p. 354, 1887) largely apply and unhesitatingly approve his fellow-countryman's teachings. I have already referred to the emphatic approval given by Pick and Keen, the editors of Gray, to the observations of Treves; and I might also cite Prof. Frank Baker's masterly article on the "Peritoneum" in Wood's "Reference Handbook of the Medical Science," vol. v. 1887; to Faneuil Weisse's "Practical Anatomy" (1886), and to other competent authorities, whose conclusions substantially agree with those of Mr. Treves, but this enumeration has already been too lengthy, and enough has been said to prove the necessity of presenting the following evidence which the neglected claims of scientific justice now urgently demand.

**Luschka* (*H.*) — Ueber die peritoneale Umhüllung des Blinddarmes und über die Fossa iliocœcalis. Archiv für pathologische Anatomie und Physiologie, Berlin, 1861, Vol. XXI, pp. 285–8.

Although it has been repeatedly stated, especially by Bardeleben in an emphatic and convincing manner,† that the cæcum, by which is understood that part of the large intestine which lies below the junction of the ileum, is without exception always surrounded by the peritoneum, there has not yet been obtained any agreement in the views

* For these translations from the German and other favors the writer is indebted to the kindness of Prof. Frank Baker, Georgetown Medical College, D. C.

† Archiv f. path. Anat. und Phys. Vol. II, p. 583.

on this subject. The greater number of anatomical and surgical writers are yet affected with the error that the posterior surface of the cæcum is, *as a rule*, like the ascending colon, entirely destitute of a serous covering and attached to the right iliac fossa by connective tissue only. In accordance with this view, the occurrence of a cæcal hernia with a peritoneal sac is considered questionable, or at least allowed only as a rare exception.

In view of the practical importance of this controversy, I have given attention to this matter for a long time past at every opportunity, and am now prepared to give my opinion.

I have not omitted to first ascertain the condition in the fœtus. In a fœtus of nine weeks I could not yet make out a well defined ascending colon as that part laid in the same general direction as the transverse colon, and its end tapered gradually to a vermiform process directed downward and to the left. The entire gut was completely invested by peritoneum and quite mobile. The vertical situation of the ascending colon and its relation to the posterior wall are acquired very slowly, comparatively speaking. In rare cases the original relations remain and then may give rise to notable displacements. In an example of this sort, the ascending colon, provided with a long mesocolon, lay under the convolutions of the small intestine in the left inguinal region, and the cæcum, together with a portion of the small intestine, had pushed through the left inguinal canal and made a very considerable left inguinal hernia.

Since it cannot be denied that the ascending colon (as indeed also the descending) is at first completely free and surrounded by the peritoneum, the fixation which occurs later can be explained only by admitting that by the growth of the body-wall towards the sides the visceral peritoneum attached thereto is drawn over to such a degree that it is unwrapped from a portion of the large intestine for the benefit of the parietal layer.

In very rare exceptional cases the beginning of the large intestine, that is to say, what afterwards becomes the cæcum is also affected, it showing at birth no well marked boundary between cæcum and vermiform process, the one passing gradually into the other, as is the case throughout life with most mammals. A review of a great number of examinations brings to mind only a very few cases in which the accepted view of the normal behavior of the cæcum was

noted, that is to say, in which the entire side turned toward the iliacus muscle was united to the wall by connective tissue only and but very slightly movable.

I regard the complete peritoneal investment as the normal arrangement, having found it so both in examinations from the peritoneal cavity and also from the outside after completely isolating the peritoneal sac. In the first instance, the cæcum may be seized, raised and laterally displaced; in the latter, it cannot be reached without wounding the peritoneum, as is not at all the case with the ascending colon. It results from this not only that there ought to be a peritoneal sac in cæcal hernia, but also "that a perityphlitis in the sense in which that term is ordinarily used is impossible unless there has been an anomalous union of the intestine with its surroundings.

In making these examinations I have always found a very noteworthy peculiarity at the point of union of the cæcum with the small intestine, namely, a pocket which from its situation might be designated as the *fossa* or *recessus-ileo-cæcalis*. It is on the median aspect of the junction, roundish in form, and of a maximum depth of 3 cm. in adults. It is bounded externally by the end of the small intestine, internally by the mesentery of the vermiform process, above by a fold from 1.5 to 2 cm. high, which is a continuation of the mesenteriolum, etc.

Luschka, H.—Die Anatomie des menschlichen Bauches. Tübingen, 1863, pp. 223-226.

The Cæcum and the Vermiform Process.—The cæcum is generally understood to include only that part of the large intestine which lies below the junction of the ileum, but a few authors consider that its upper border is a plane passing immediately above that junction. This difference is not in itself of any importance, but may lead to misunderstanding in discussing the question of the peritoneal investment of the viscus. The cæcum limited by the boundary first mentioned is the widest part of the intestine, is often distended to a sac-like shape, and has a varying length of from 1 to 4 inches (Zoll).

Its long axis is more or less curved inwards and upwards, so that its rounded end is turned in that direction. The three columns of haustra, as well as the ligamenta coli,* are continued as far as the root of the vermiform

*German Anatomists call the three flat and narrow longitudinal bands of muscular fibre seen externally on the colon, the *ligamenta* or *tæniæ coli*, and the saccules between them, *haustra*.—Translator.

process, into which it not infrequently happens that the entire wall of the cæcum so passes that it has a conical form with a pointed end.

Normally the cæcum lies upon the iliacus internus muscle, but does not actually touch its sheath, as that portion which is turned toward the muscle has a complete serous investment and the sheath itself is covered with peritoneum. Under the cæcum there is sometimes found the so-called subcæcal fossa* of the peritoneum, that raises the membrane in folds to the right and the left. In an adult of thirty-one years Engel† found this pocket widened to such a degree that it contained nearly all the convolutions of the small intestine and so constituted a true hernial sac, which communicated with the peritoneal cavity by an opening two inches wide and was associated with a displacement of the cæcum to the left and above the umbilicus. But without such an internal subcæcal hernia the cæcum shows many anomalies of position, which sometimes relate to development, sometimes arise later. In connection with those of development it is to be remembered that at a certain period of fœtal life the cœcum lies in the same direction as the transverse colon, which is also that of its reduced end, the vermiform process, and that it only very gradually attains the vertical position and its relation to the right internal iliac muscle. Thus are explained the cases in which the cœcum is found resting upon the belly of the psoas major or pushed back against the middle plane of the abdominal cavity. From the circumstance that the cœcum as a rule possesses a complete peritoneal investment, is explained, not only the fact that a cœcal hernia usually has a peritoneal sac, but also the considerable changes of place, which the viscus may undergo, as in a case observed by me, in which the cæcum together with a portion of the small intestine passed through the left inguinal canal and became a portion of a left inguinal hernia, and in a case reported by Dugel in which the cæcum was found shoved up between the right lobe of the liver and the diaphragm, etc., etc.

Hyrtl, J.—Topographische Anatomie, seventh and last edition, Wien, 1882; vol. i, pp. 803-4.

Recently it has been found that there are no grounds for a generally accepted anatomical article of faith, viz.: That

*This should not be confounded with the ileo-cœcal fossa elsewhere described by Luschka.—Tr.

†Wiener Med. Wochenschrift, 1861, No. 40.

the cæcum, like the ascending colon, is only partially covered by peritoneum, and that its posterior surface, not so covered, is attached by connective tissue to the iliac fascia. In the far greater number of cases the cæcum has a complete peritoneal investment, and is therefore movable and detachable (umgreifbar). As a rare exception to the rule it lies upon the fascia covering the right iliacus muscle, in such a way that only about two-thirds of its surface is covered by peritoneum. If in this rare case the entire circumference of the cæcum should become engaged in a hernia, the part of the wall not covered by peritoneum must lie external to the hernial sac. (*Hernie acystique*, Cruveilhier). The connective tissue by which the posterior surface of the cæcum is exceptionally united to the iliac fascia may by suppuration (perityphlitis) form abscesses, which may extend upon this fascia, or after penetrating it, extend under it, and in this latter case go down as far as the crural arch under Poupart's ligament and there be mistaken for a psoas abscess. Frequently the cause of these abscesses is foreign bodies which remain sticking in the cæcum, sometimes also hardened masses of fœces. If the cæcum is free, and provided with a complete peritoneal investment, perityphlitis cannot occur unless the free surface becomes united to the iliac fascia by adhesions occasioned by inflammation.

Henle (*J.*)—Handbuch der systematischen Anatomie, 2d edition. Braunschweig, 1873, Vol. II, p. 907.

The cæcum is completely surrounded by peritoneum as far as the mouth of the small intestine, and so is usually the vermiform process with the exception of a narrow strip on its anterior surface from which passes a sharp edged fold, the *mesenteriolum processus vermiformis*, of which the upper end joins the under sheet of the iliac mesentery.

[Similar statement, p. 82, same vol. There is no mention made by Henle of a mesocæcum. His work is large and comprehensive, and he is especially full on minute details. The omission is therefore decidedly significant.—*Trans.*]

Langer (*C.*)—Lehrbuch der systematischen und topographischen Anatomie, 3d edition. Wien, 1885, p. 508.

The cæcum is, as a rule, completely surrounded (by peritoneum), and its covering passes over to the lower sur-

face of the ileum as a small fold, (*plica ileo-cæcalis*) in which there are found unstriped muscular fibres.

Heitzmann (*L.*) — Anatomy, Descriptive and Topographical. Vienna and New York, 1887, Vol. II, p. 28. [See preceding edition *]

Only the cæcum with the vermiform appendix, transverse colon and sigmoid flexure are completely invested with peritoneum which is more or less wanting on the posterior surface of the other parts of the large intestine.

As you will notice I have simply sought to establish in this communication the claims to priority which are certainly due the Germans for the elucidation of this interesting and important point in visceral anatomy. I have not argued the correctness of the simple statement that the cæcum is, *as a rule*, entirely invested by serous membrane on all its surfaces, because I regard this statement as expressing a thoroughly proven and now admitted anatomical *fact*, the discussion of which would be, in my estimation, superfluous. However, as one drop more of personal experience is not likely to spill the cup of the accumulated observations of other and more authorized observers, I will add that since the publication of my paper on "Iliac Phlegmons" (1886), in which I stated that I had confirmed Mr. Trevos' assertion by the examination of over twenty-five subjects, I have added over fifty-five recorded observations, made during the session of 1886–7, in the Anatomical Rooms of Tulane University and in the Dead House of the Charity Hospital, where, with the assistance of Dr. A. McShane, Assistant Demonstrator of Anatomy, I have, with the exception of four cases (out of eighty), always found the cæcum completely enveloped by peritoneum. I have never seen a real meso-cæcum. And in the exceptional cases in which this bowel was adherent by its posterior surface to the abdominal parietes, the causes that intervened (excluding the accidental, acquired,) were readily explained by the well known developmental peculiarities of this portion of the large intestine. A great deal of inter-

*See Editorial August number, 1886—"Anatomical Relations of the Cæcum."

esting information has been recently gathered on the anatomy of the cæcum, owing to the valuable application of anatomical data in the ever widening field of abdominal surgery. To the confirmation of these facts, and especially to the morphological types presented by the cæcum, as viewed from the standpoint of the comparative anatomists, I hope to revert some day and, I trust, more interestingly. It is in this latter light that Mr. Treves' researches are essentially original, invaluable and deserving of the greatest admiration.

Notwithstanding the great length of this communication I have endeavored to condense it to the narrowest limits compatible with the explanation of my purpose; still I fear that I have encroached almost unpardonably upon your valuable space, especially when I consider that the whole point discusssd revolves around a proposition or rather a *fact* which you have stated that you "could not sanction, even by silence. I am, dear sirs,

Very respectfully yours,

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New Orleans, Nov. 21, 1887.